



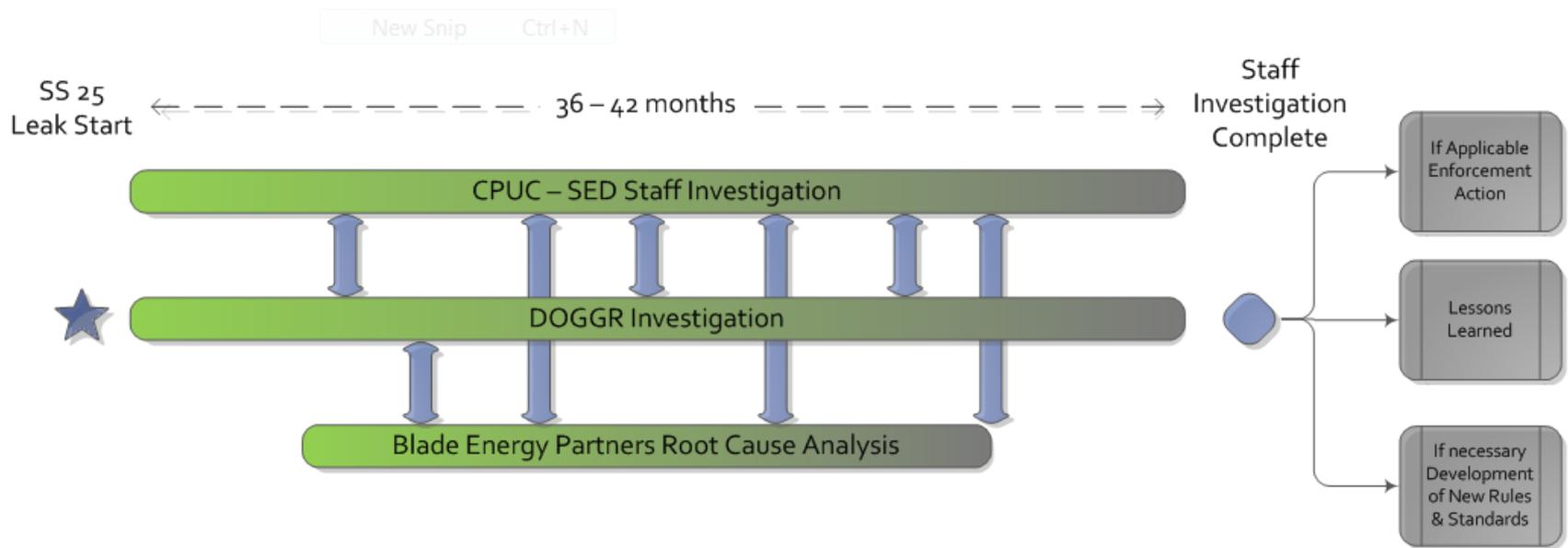
# Aliso Canyon SS25 Well Leak Investigation Overview

March 2017





# Two State Investigations and Independent Root Cause Analysis

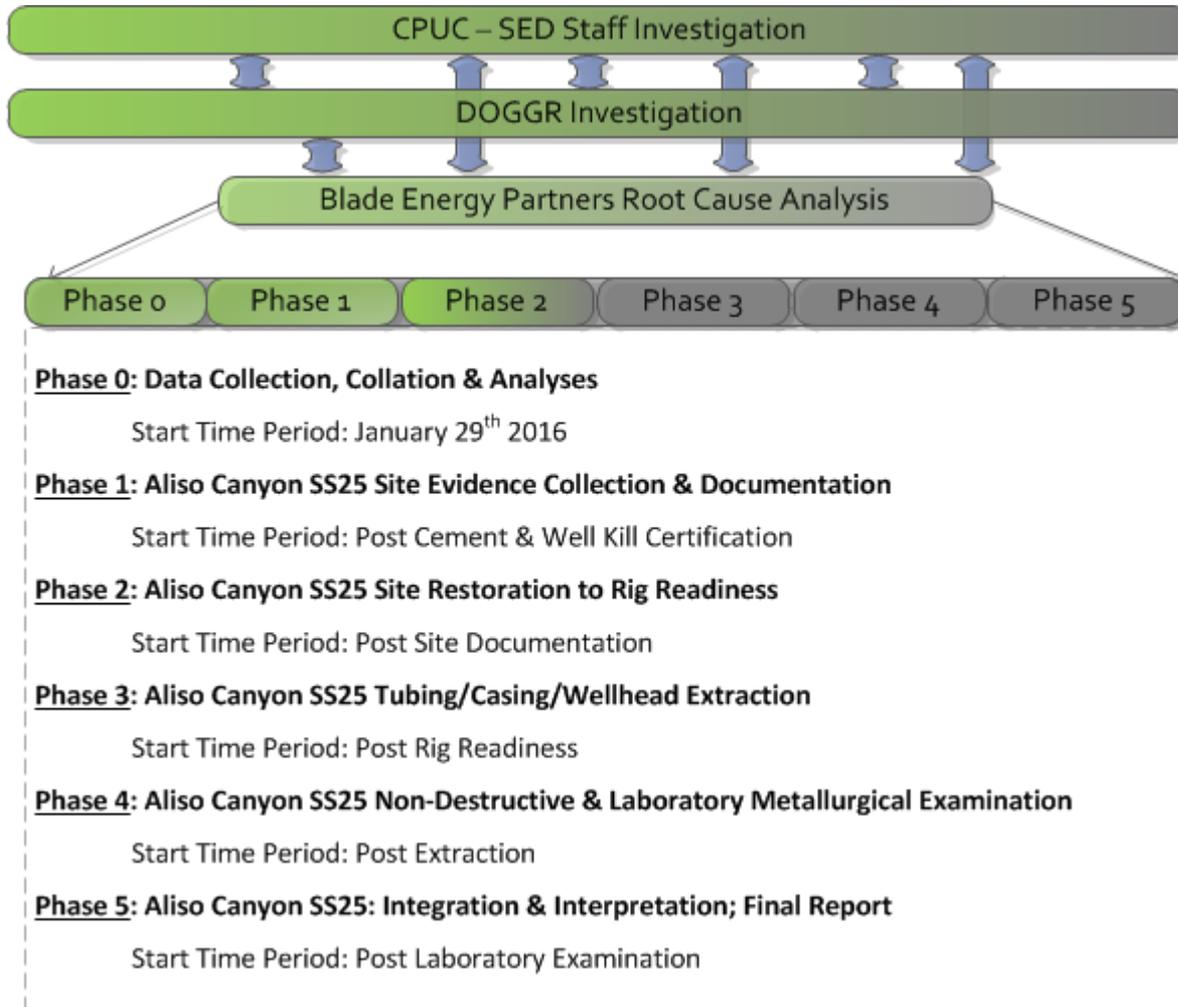


CPUC = California Public Utilities Commission  
DOGGR = Division of Oil, Gas and Geothermal Resources  
Blade Energy Partners = Independent 3<sup>rd</sup> party





# Phases of Root Cause Analysis

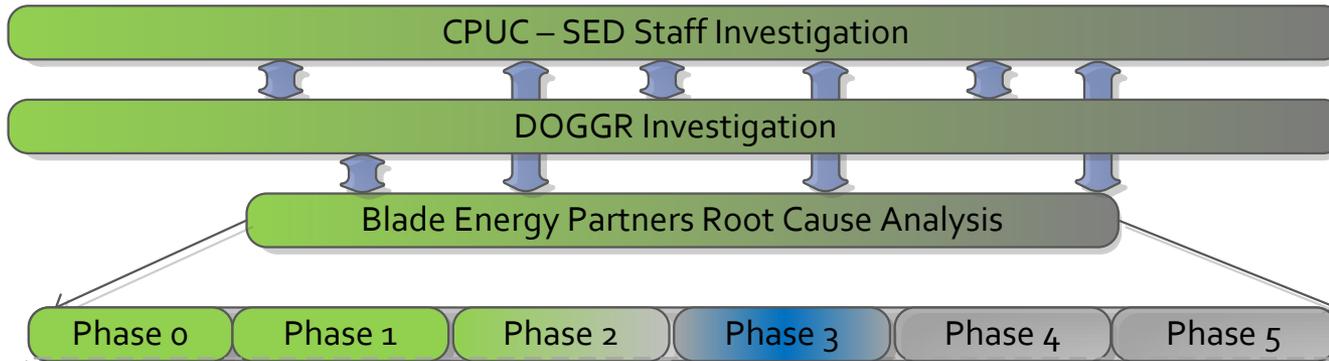


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# Root Cause Analysis: Current Activities



## Phase 2: SS25 Site Restoration to Rig Readiness (Active)

- Finalize Phase 3 Protocol [Complete]
- SoCal Gas to file an NOI with DOGGR for Phase 3 [Pending]
- Rig Construction at SS-25 site [Pending]

## Phase 3: Tubing/Casing Extraction (Preparing)

- SS-25A Fluid Loss Investigation & Remediation
- SS-25A Well Logging and Tubing Extraction or Recovery
- SS-25: Phase 3-A 2-7/8" Tubing Recovery and 7" Logging
- SS-25: Phase 3-B Upper 7" Casing Recovery and 11-3/4" Logging
- SS-25: Phase 3-C Pressure Test and Repair 11 3/4" Casing
- SS-25: Phase 3-D Lower 7" Casing Recovery and Tieback

Phase 3 Duration Estimate: 178 to 276 days





# SS-25A Fluid Loss Investigation & Remediation

- DOGGR requires SoCal Gas to “conduct noise log, temperature log, and positive pressure test every six months” for the wells that have been taken out of service and isolated from the gas storage reservoir. Testing on wells SS 25A and SS 25B are due in March 2017.
- Through monitoring of fluid and pressure levels, as required in Order 1109, Step 7b: subparagraph c., DOGGR has observed a decrease in the level of fluid in the production tubing and annulus of the SS 25A well. DOGGR has directed SoCalGas to further investigate and fully remediate this fluid loss at SS25A.
- SS25, SS25A and SS25B are located in close proximity to one another. It is not possible to perform evidence recovery from SS25 while work at SS25A is being conducted (not enough space for two rigs).
- SS25A and SS25B are also of interest to the Root Cause Analysis team. Therefore, work at SS25A will be completed before proceeding with evidence recovery from SS25.
- SS25A work is expected to take 40 to 50 days.





# Looking Ahead to Phase 3: Tubing & Casing Extraction at SS-25

**Step 1:** Cut and recover the 2-7/8" tubing, all the way down to the cement plug at ~ 7,000 feet

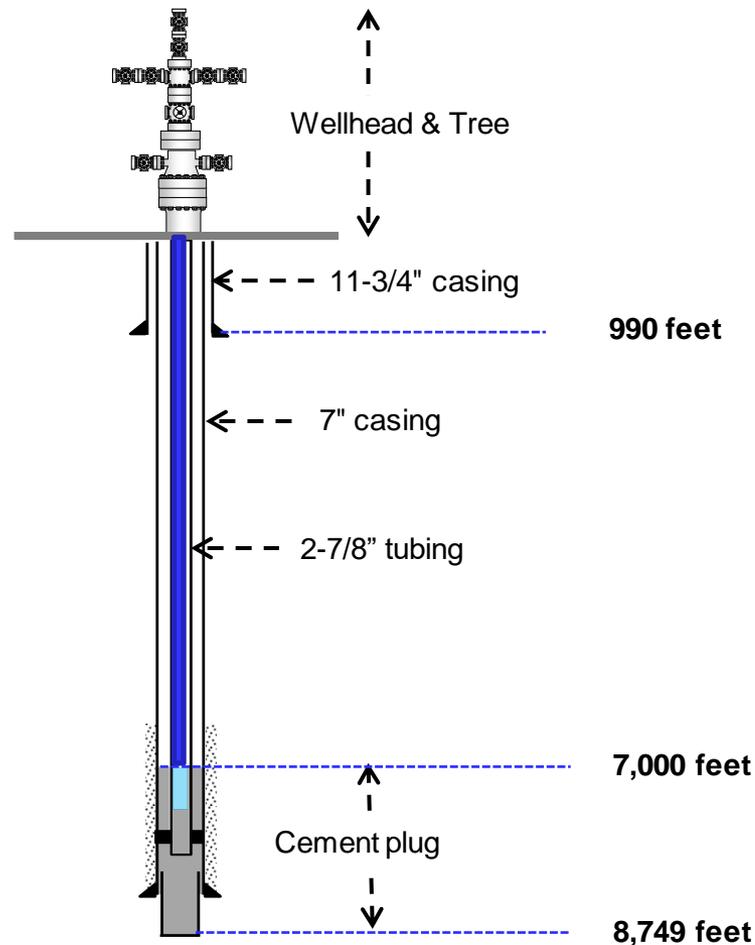
*Perform Diagnostic Testing*

**Step 2:** Recover the 7" casing . Will try to get down to 895 feet, then re-evaluate safety. If feasible, will attempt to extract casing down to ~4,500 feet.

*Perform Diagnostic Testing*

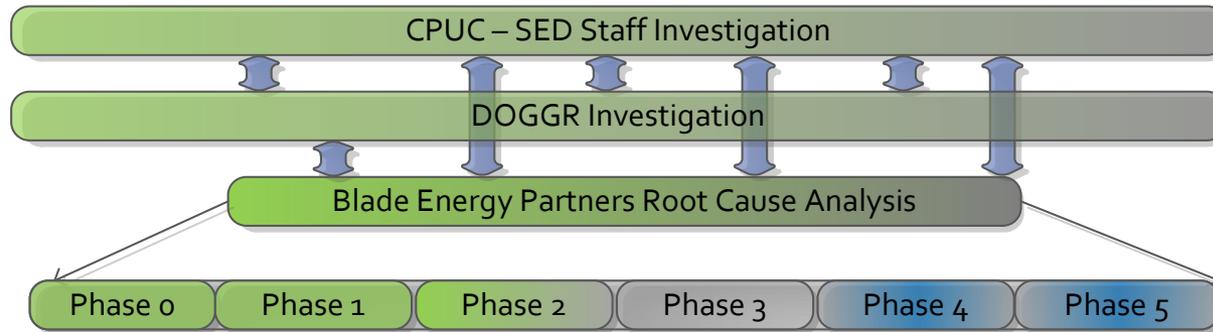
**Step 3:** Recover the wellhead and tree

*Prepare site for Plug and Abandon*





# Looking Ahead to Phase 4



## **Phase 4: Aliso Canyon SS25 Non-Destructive & Laboratory Metallurgical Examination**

Blade Energy Partners selected two labs to perform evidence examination and testing:

- Failure Analysis Laboratory (<https://www.element.com/locations/usa/houston>)
- Inspection Services Company (<http://www.patterson-tubular.com/>)

There are several types of examination and testing that will be performed including the following:

- Visual, Metallographic examination and dimensional analysis; Surface preparation
- Non-destructive examination; Corrosion examination; Connection testing and assessment
- Fractographic examination (SEM); Mechanical testing and compositional analysis

Phase 4 Duration Estimate:

- 30 calendar days of transportation and obtaining all regulator approvals for cutting, sectioning etc.
- 70 calendar days of work

## **Phase 5: Aliso Canyon SS25: Integration & Interpretation; Final Report**

Phase 5 Duration Estimate: 60 calendar days





# Overall Schedule Breakdown

- Phase 3: Extraction of Tubulars
  - 3A, 3B and 3C: Extraction of 7” above the shoe (930 feet of 7”)
    - 94 to 150 total calendar days
      - Includes the 30 days for stoppage after pulling the tubing and 7” logging per latest DOGGR communication
  - 3A, 3B, 3C and 3D: Extraction of 7” up to some footage below the shoe
    - 138 to 226 total calendar days (includes above time)
      - Includes the 30 days of stoppage after pulling the tubing and 7” logging per latest DOGGR communication
- Phase 4: Laboratory Examination
  - NDE, Connection Testing, Metallurgical examination
    - 30 calendar days of transportation and obtaining all regulator approvals for cutting, sectioning etc.
    - 70 calendar days of work
- Phase 5: Integration & Interpretation; Final Report
  - 60 calendar days





# Investigation Transparency

- SS 25 site has video cameras around the perimeter, covering the area from different angles and providing for variety of points of view
- A viewing facility has been set-up for interested parties (e.g. plaintiff attorneys and their experts) to observe activities at SS25 during evidence extraction
- Protocols for evidence extraction have been shared with the interested parties for comments, questions and feedback
- Investigation related data that's being shared with SoCal Gas for operational reasons (e.g. data from diagnostic runs) is also being shared with interested parties
- Laboratory testing will allow for observation by interested parties
- Public information is being posted on the website at <http://www.cpuc.ca.gov/aliso/>
- For access to view viewing, copies of protocols and other investigation related questions, please contact Safety and Enforcement Division attorney Nicholas Sher [nicholas.sher@cpuc.ca.gov](mailto:nicholas.sher@cpuc.ca.gov) or 415-703-4232





**Thank you!**

